

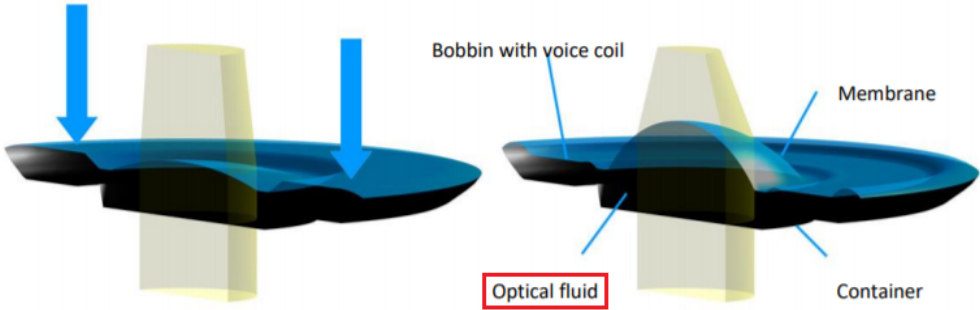
EXHIBIT 12

Exhibit No. 12

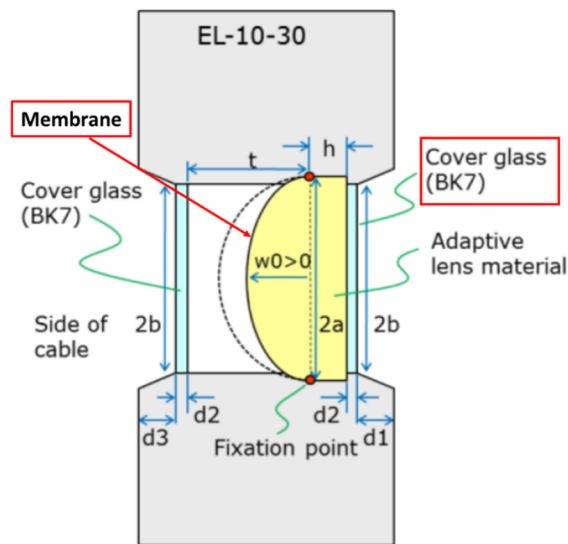
Infringement Claim Chart of U.S. Patent No. 8,064,142 by Optotune and Edmund Optics¹

Accused products including Optotune's liquid focus tunable lenses based on electrical actuation (including EL-3-10, EL-10-30-TC, EL-10-30-C, EL-10-42-OF, EL-16-40-TC, and ELM lens) and Edmund Optics' liquid lens products that integrate Optotune's electrically actuated liquid focus tunable lenses (including MercuryTL™ Liquid Lens Telecentric Lenses, Optotune Focus Tunable Lens, Tunable Compact Objective Liquid Lens Assemblies, LT Series Fixed Focal Length Lenses, and Dynamic Focus VZM™ Lens) (the "Accused Products") infringe each element of the Asserted Claims of U.S. Patent No. 8,064,142 (the "'142 Patent"). Further, Optotune AG and Edmund Optics instruct their customers regarding the use of the Accused Products to enable the use of the features identified throughout this chart. Optotune AG and Edmund Optics intend and instruct that their customers use these features in a manner that practices each element of the Asserted Claims. Plaintiff contends each of the following limitations is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

¹ This claim chart is based on the information currently available to Plaintiff and is intended to be exemplary in nature. Plaintiff reserves all rights to update and elaborate their infringement positions, including as Plaintiff obtains additional information during the course of discovery.

Claim	Accused Products
<p>[25Pre] A fluidic lens device, comprising:</p>	<p>The Accused Products meet this limitation.</p> <p>The Optotune EL-10-30-C includes a fluidic lens device (i.e. electrically tunable lens EL-10-30-C with optical fluid). More specifically, the Optotune EL-10-30-C lens is a shape-changing lens based on a combination of optical fluids and a polymer membrane.</p> <p>Working principle</p> <p><u>The EL-10-30 is a shape-changing lens, as illustrated in Figure 5. It consists of a container, which is filled with an optical fluid and sealed off with an elastic polymer membrane. The deflection of the lens is proportional to the pressure in the fluid. The EL-10-30 has an electromagnetic actuator that is used to exert pressure on the container. Hence, the focal distance of the lens is controlled by the current flowing through the coil of the actuator.</u></p>  <p><i>Figure 5: Working principle of the EL-10-30 series.</i></p> <p>Optotune EL-10-30-Series Spec Sheet at 6.</p>
<p>[25A] a fluidic lens having a first optical surface, a second optical surface; and</p>	<p>The Accused Products meet this limitation.</p>

The Optotune EL-10-30-C includes a fluidic lens having a first optical surface (i.e., the membrane) and a second optical surface (i.e. Cover glasses made of BK7).



Optotune EL-10-30-Series Spec Sheet at 5.

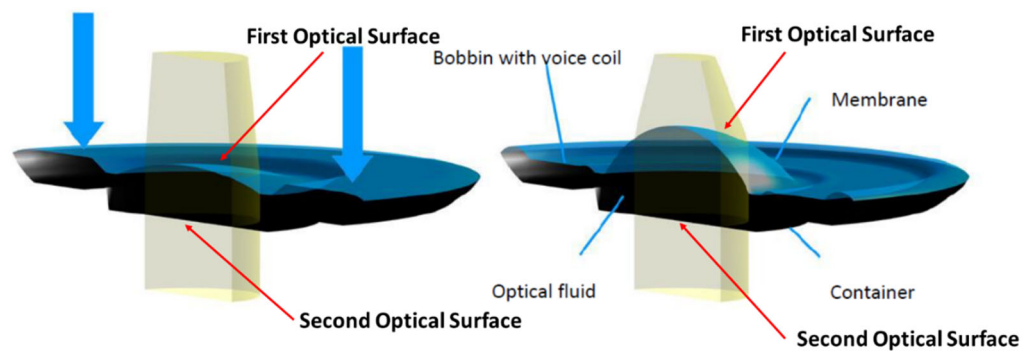


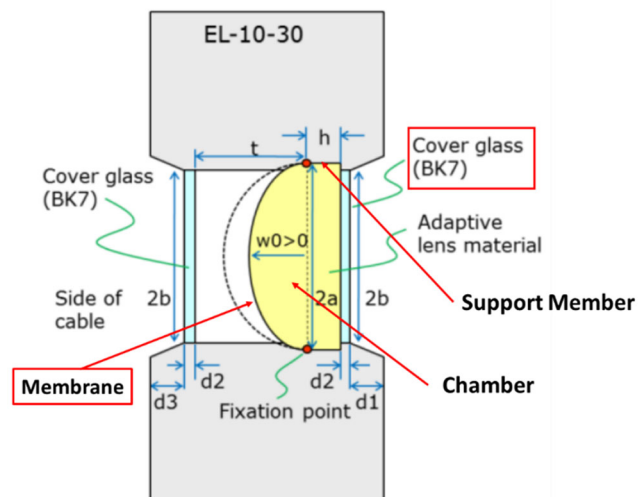
Figure 5: Working principle of the EL-10-30 series.

Optotune EL-10-30-Series Spec Sheet at 6.

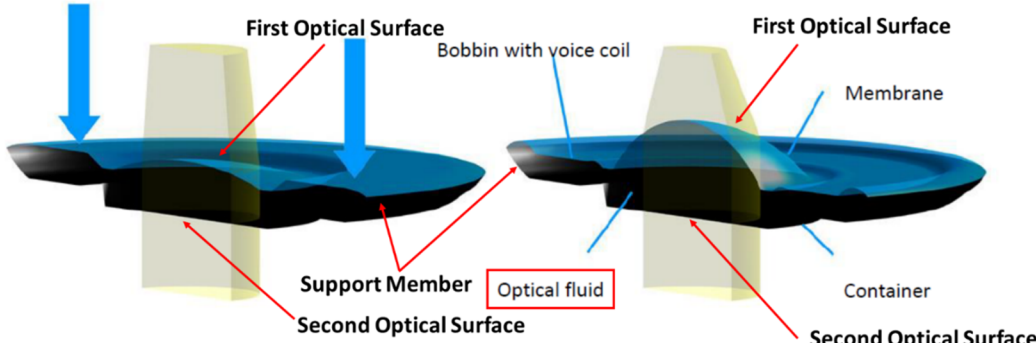
[25B] a support member disposed between the first and second optical surfaces defining a chamber,

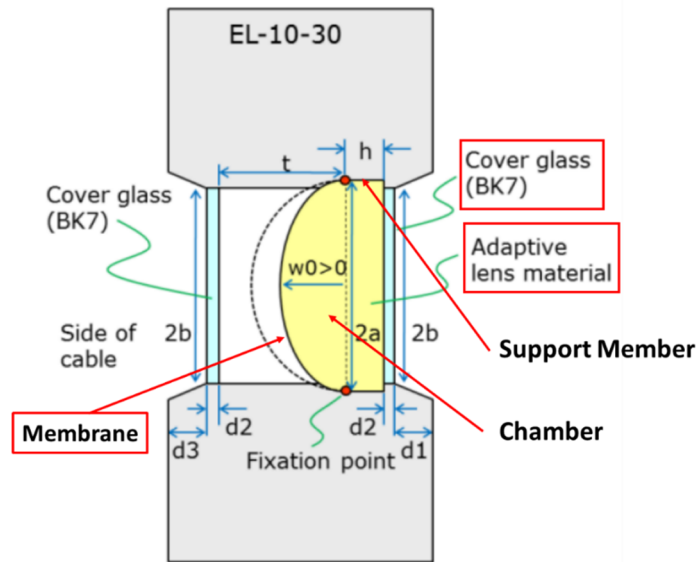
The Accused Products meet this limitation.

The Optotune EL-10-30-C includes a support member (i.e., side wall or support wall) disposed between the membrane and the cover glass. The side wall defines a chamber including the space enclosed by the side wall, the membrane, and the cover glass. The chamber is configured to hold the optical fluid.



Optotune EL-10-30-Series Spec Sheet at 5.

	 <p>Figure 5: Working principle of the EL-10-30 series.</p> <p>Optotune EL-10-30-Series Spec Sheet at 6.</p>
<p>[25C] wherein said support member is at least partially electrically conductive;</p>	<p>The Accused Products meet this limitation.</p> <p>On information and belief, the side wall, as part of the housing, in Optotune EL-10-30-C is made of a metal material (e.g., aluminum) and therefore is at least partially electrically conductive.</p> <p>Optotune EL-10-30-Series Spec Sheet at 10.</p>
<p>[25D] wherein the chamber is filled with a fluid;</p>	<p>The Accused Products meet this limitation.</p> <p>The chamber as defined by the side wall in Optotune EL-10-30-C is filled with optical fluid (also referred to as adaptive lens material).</p>



Optotune EL-10-30-Series Spec Sheet at 5.

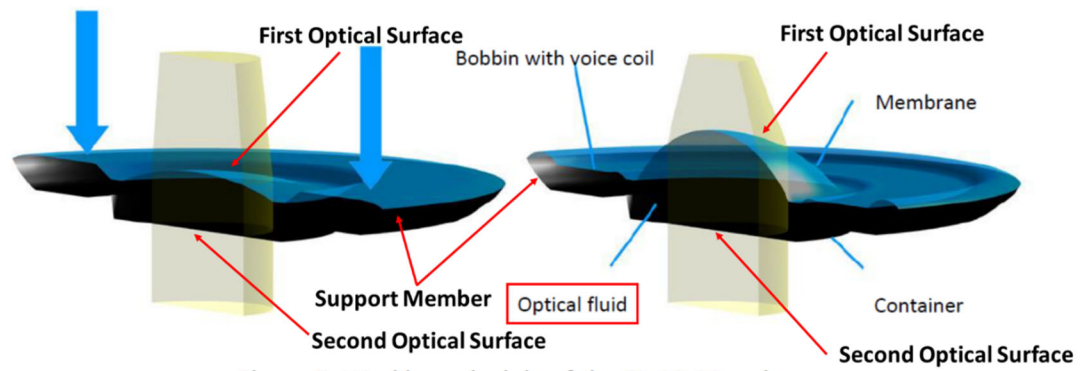


Figure 5: Working principle of the EL-10-30 series.

Optotune EL-10-30-Series Spec Sheet at 6.

[25E] wherein the first optical surface, the second optical surface, or the support member are configured such that application of an actuation force to one or more of the first optical surface, the second optical surface, or the support member results in a change in pressure in the chamber, thereby resulting in a deflection of one or more of the optical surfaces and thereby changing one or more optical properties of the fluidic lens.

The Accused Products meet this limitation.

The Optotune EL-10-30 includes an electromagnetic actuator configured to apply an actuation force at the outer portion of the membrane (i.e., first optical surface), as indicated by the blue arrows in the figure below. The actuation force changes the pressure in the chamber that contains the optical fluid, thereby resulting in a deflection of the central portion of the membrane (i.e., first optical surface). The deflection of the membrane changes the focal power (i.e., optical property) of the Optotune EL-10-30.

Working principle

The EL-10-30 is a shape-changing lens, as illustrated in Figure 5. It consists of a container, which is filled with an optical fluid and sealed off with an elastic polymer membrane. The deflection of the lens is proportional to the pressure in the fluid. The EL-10-30 has an electromagnetic actuator that is used to exert pressure on the container. Hence, the focal distance of the lens is controlled by the current flowing through the coil of the actuator.

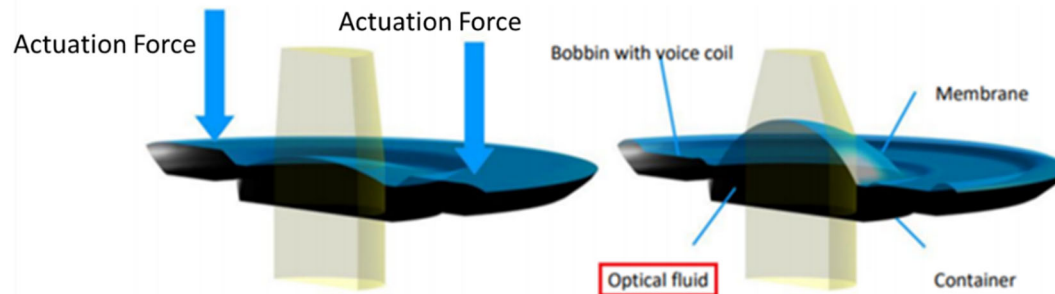


Figure 5: Working principle of the EL-10-30 series.

Optotune EL-10-30-Series Spec Sheet at 6.

Resolution and reproducibility

The step size of the focal power is limited by the resolution of the DAC of the current driver. For high precision applications a driver with 12 bits is recommended. As the relation between current and focal power is linear, the smallest step of e.g. the EL-10-30-C-VIS-LD about 0.0018 Dpt.

Unlike piezo systems, the EL-10-30 exhibits no hysteresis. The current through the coil induces a force, which is directly transferred onto the elastic membrane. There is no friction in the system. This means that at a constant temperature jumping between alternate current levels will always yield the same focal length. The effect of changes in temperature are described above. Optotune's Lens Driver 4 offers a focal power mode, which makes use of calibration data stored in the lens (EEPROM of the STTS2004). The absolute reproducibility achieved over an operating temperature range of 10 to 50°C amounts to typically 0.1 diopters. More details on the focal power mode are provided in the Lens Driver manual.

Optotune EL-10-30-Series Spec Sheet at 10.

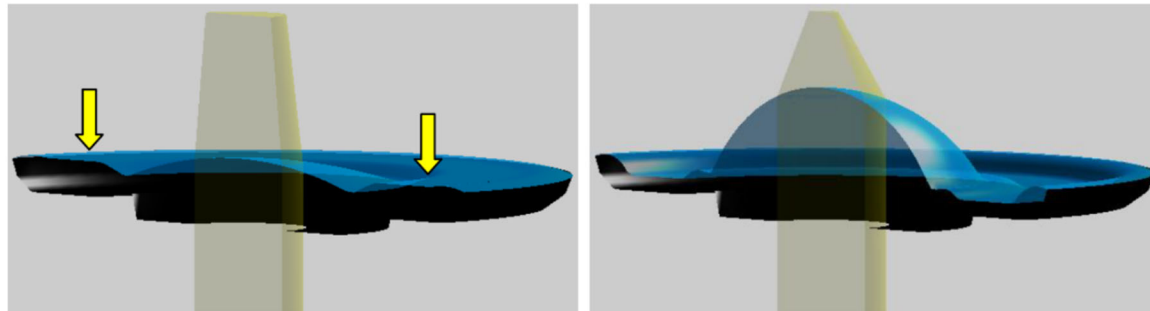


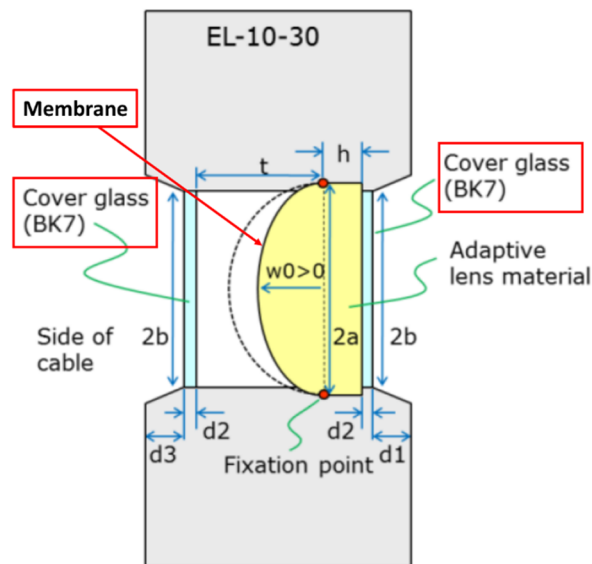
Figure 3: Working principle of the Optotune's EL-10-30. In this case, the lens-shaper ring remains in place relative to the container. The only movement is a ring that pushes down on the membrane with increasing current in the outer part of the lens, thus pumping the liquid into the lens that forms in the center.

Optotune Focus Tunable Lenses and Laser Speckle Reduction at 3.

[28Pre] A fluidic lens device, comprising:

The Accused Products meet this limitation. *See Claim 25Pre supra.*

[28A] a fluidic lens having a first optical surface, a second optical surface; and	The Accused Products meet this limitation. <i>See Claim 25A supra.</i>
[28B] a support member disposed between the first and second optical surfaces defining a chamber;	The Accused Products meet this limitation. <i>See Claim 25B supra.</i>
[28C] wherein the chamber is filled with a fluid;	The Accused Products meet this limitation. <i>See Claim 25D supra.</i>
[28D] wherein the first optical surface, the second optical surface, or the support member are configured such that application of an actuation force to one or more of the first optical surface, the second optical surface, or the support member results in a change in pressure in the chamber, thereby resulting in a deflection of one or more of the optical surfaces and thereby changing one or more optical properties of the fluidic lens; and	The Accused Products meet this limitation. <i>See Claim 25E supra.</i>
[28E] one or more plates in communication with one or more of the optical surfaces or the support member.	<p>The Accused Products meet this limitation.</p> <p>The Optotune EL-10-30-C includes a second cover glass (i.e., plate) disposed in optical communication with the membrane (i.e., first optical surface) and the bottom cover glass (i.e., second optical surface).</p>



Optotune EL-10-30-Series Spec Sheet at 5.

[29Pre] A fluidic lens device, comprising:

The Accused Products meet this limitation. *See Claim 25Pre supra.*

[29A] a fluidic lens having a first optical surface, a second optical surface; and

The Accused Products meet this limitation. *See Claim 25A supra.*

[29B] a support member disposed between the first and second optical surfaces defining a chamber;

The Accused Products meet this limitation. *See Claim 25B supra.*

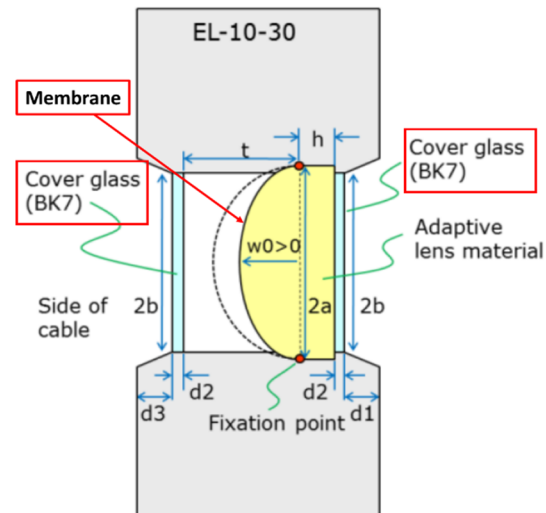
[29C] wherein the chamber is filled with a fluid;

The Accused Products meet this limitation. *See Claim 25D supra.*

[29D] wherein the first optical surface, the second

The Accused Products meet this limitation. *See Claim 25E supra.*

<p>optical surface, or the support member are configured such that application of an actuation force to one or more of the first optical surface, the second optical surface, or the support member results in a change in pressure in the chamber, thereby resulting in a deflection of one or more of the optical surfaces and thereby changing one or more optical properties of the fluidic lens; and</p>	
<p>[29E] one or more plates in communication with one or more of the optical surfaces or the support member; wherein one or more of the plates includes one or more apertures.</p>	<p>The Optotune EL-10-30-C includes a second cover glass (i.e., plate) disposed in optical communication with the membrane (i.e., first optical surface) and the bottom cover glass (i.e., second optical surface). The second cover glass includes an optical aperture in order to pass light through the EL-10-30-C and allow EL-10-30-C to function properly as a lens.</p>



Optotune EL-10-30-Series Spec Sheet at 5.

The Optotune EL-10-30-C also includes an actuation ring that pushes down on the membrane to change the focal power of lens. The actuation ring has a ring shape as inferred from the change of shape at the outer portion of the membrane, i.e., the actuation ring is a plate having an aperture in the center.

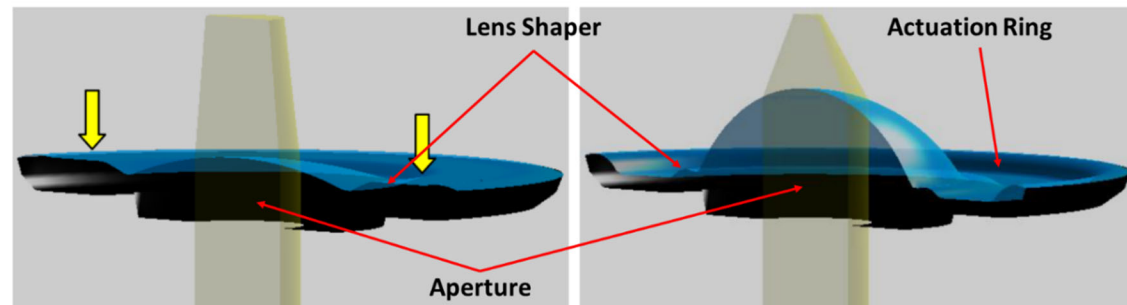


Figure 3: Working principle of the Optotune's EL-10-30. In this case, the lens-shaper ring remains in place relative to the container. The only movement is a ring that pushes down on the membrane with increasing current in the outer part of the lens, thus pumping the liquid into the lens that forms in the center.

Optotune Focus Tunable Lenses and Laser Speckle Reduction at 3.

[30Pre] A fluidic lens device, comprising:	The Accused Products meet this limitation. <i>See Claim 25Pre supra.</i>
[30A] a fluidic lens having a first optical surface, a second optical surface; and	The Accused Products meet this limitation. <i>See Claim 25A supra.</i>
[30B] a support member disposed between the first and second optical surfaces defining a chamber;	The Accused Products meet this limitation. <i>See Claim 25B supra.</i>
[30C] wherein the chamber is filled with a fluid;	The Accused Products meet this limitation. <i>See Claim 25D supra.</i>
[30D] wherein the first optical surface, the second optical surface, or the support member are configured such that application of an actuation force to one or more of the first optical surface, the second optical surface, or the support member results in a change in pressure in the chamber, thereby resulting in a deflection of one or more of the optical surfaces and thereby changing one or more optical properties of the fluidic lens; and	The Accused Products meet this limitation. <i>See Claim 25E supra.</i>

<p>[30E] one or more inner support members located proximate an aperture, wherein the one or more inner support members are configured to support one or more of the optical surfaces relative to the aperture.</p>	<p>The Accused Products meet this limitation.</p> <p>The EL-10-30 includes a lens shaper (i.e., inner support member) that defines the clear aperture of the lens, i.e., the area within the lens shaper is the clear aperture through which incident light can pass. The lens shaper is located proximate the aperture (i.e., the lens shaper is located at the periphery of the aperture) and is configured to support the first optical surface (i.e., membrane) relative to the aperture.</p> <div data-bbox="663 470 1785 771" data-label="Image"> </div> <p><u>Figure 3: Working principle of the Optotune's EL-10-30. In this case, the lens-shaper ring remains in place relative to the container. The only movement is a ring that pushes down on the membrane with increasing current in the outer part of the lens, thus pumping the liquid into the lens that forms in the center.</u></p> <p>Optotune Focus Tunable Lenses and Laser Speckle Reduction at 3.</p>
<p>[34Pre] A fluidic lens device, comprising:</p>	<p>The Accused Products meet this limitation. <i>See Claim 25Pre supra.</i></p>
<p>[34A] a fluidic lens having a first optical surface, a second optical surface; and</p>	<p>The Accused Products meet this limitation. <i>See Claim 25A supra.</i></p>
<p>[34B] a support member disposed between the first and second optical surfaces defining a chamber;</p>	<p>The Accused Products meet this limitation. <i>See Claim 25B supra.</i></p>
<p>[34C] wherein the chamber is filled with a fluid;</p>	<p>The Accused Products meet this limitation. <i>See Claim 25D supra.</i></p>

<p>[34D] wherein the first optical surface, the second optical surface, or the support member are configured such that application of an actuation force to one or more of the first optical surface, the second optical surface, or the support member results in a change in pressure in the chamber, thereby resulting in a deflection of one or more of the optical surfaces and thereby changing one or more optical properties of the fluidic lens,</p>	<p>The Accused Products meet this limitation. <i>See</i> Claim 25E <i>supra</i>.</p>
<p>[34E] wherein at least a portion of one or more of a plate, the support member, or a plate shoulder is adapted for the application of a shear stress to the support member.</p>	<p>The Accused Products meet this limitation.</p> <p>The Optotune EL-10-30-C includes an actuation ring (i.e., a plate having an aperture) configured to press against the membrane. <i>See</i> Claim 29E <i>supra</i>. The actuation ring is adapted to apply a shear stress to the side wall (i.e., support member). More specifically, when the membrane is stretched, under the actuation force applied by the actuation ring, the membrane tends to pull the side walls at least in the horizontal direction (i.e., shear stress).</p>

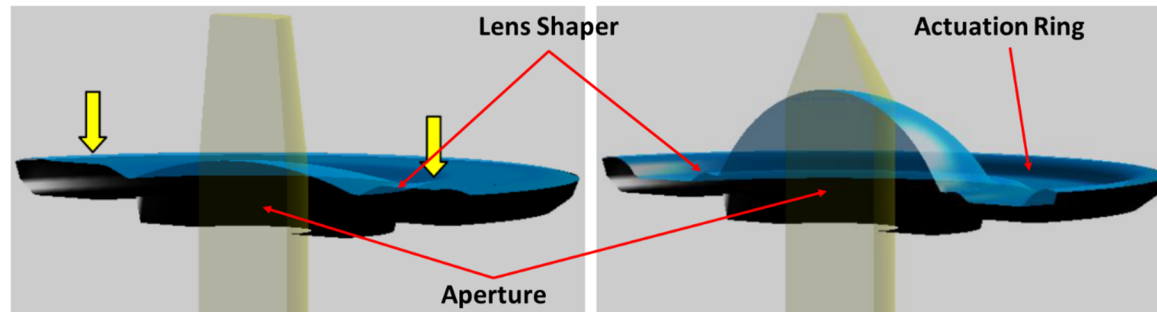


Figure 3: Working principle of the Optotune's EL-10-30. In this case, the lens-shaper ring remains in place relative to the container. The only movement is a ring that pushes down on the membrane with increasing current in the outer part of the lens, thus pumping the liquid into the lens that forms in the center.

Optotune Focus Tunable Lenses and Laser Speckle Reduction at 3.

[42Pre] A fluidic lens device, comprising:

The Accused Products meet this limitation. *See Claim 25Pre supra.*

[42A] a fluidic lens having a first optical surface, a second optical surface; and

The Accused Products meet this limitation. *See Claim 25A supra.*

[42B] a support member disposed between the first and second optical surfaces defining a chamber,

The Accused Products meet this limitation. *See Claim 25B supra.*

[42C] wherein said support member is at least partially rigid;

The Accused Products meet this limitation.

On information and belief, the side wall in the Optotune EL-10-30-C (i.e., support member) is made of a metal material (e.g., aluminum) and therefore at least partially rigid.

Optotune EL-10-30-Series Spec Sheet at 10.

[42D] wherein the chamber is filled with a fluid;

The Accused Products meet this limitation. *See Claim 25D supra.*

<p>[42E] wherein the first optical surface, the second optical surface, or the support member are configured such that application of an actuation force to one or more of the first optical surface, the second optical surface, or the support member results in a change in pressure in the chamber, thereby resulting in a deflection of one or more of the optical surfaces and thereby changing one or more optical properties of the fluidic lens.</p>	<p>The Accused Products meet this limitation. <i>See</i> Claim 25E <i>supra</i>.</p>
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